

(No Model.)

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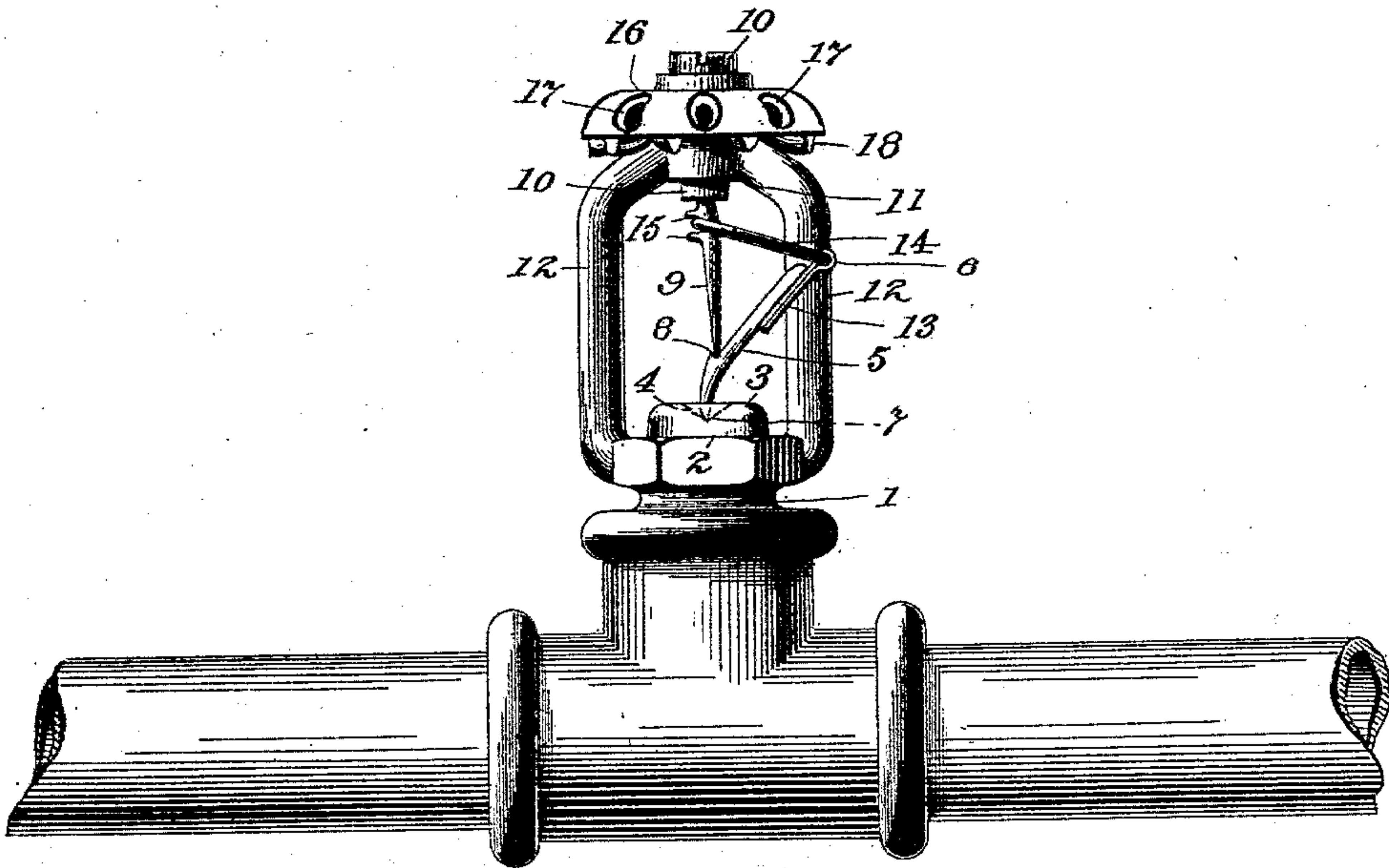
E. F. STECK.

AUTOMATIC SPRINKLER FOR FIRE EXTINGUISHERS.

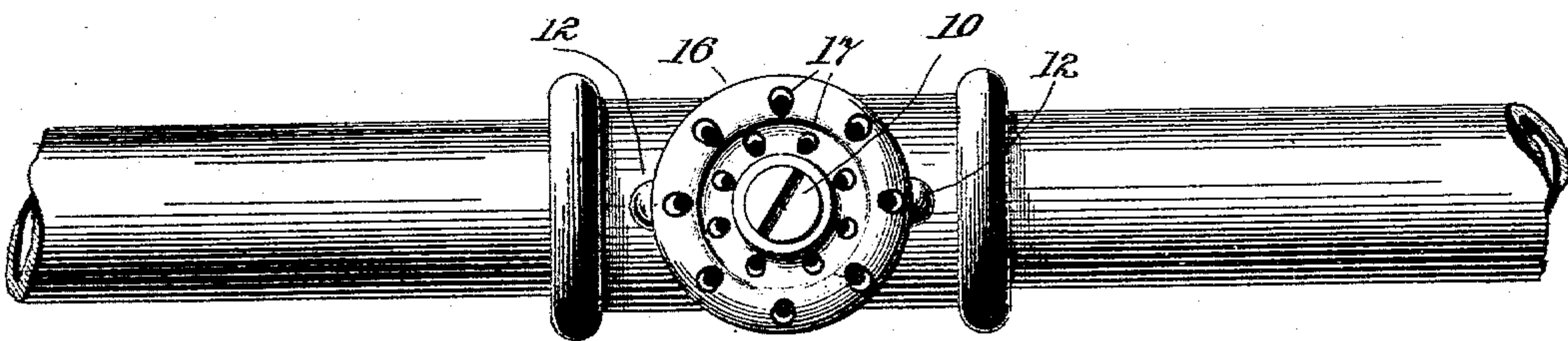
No. 571,581.

Patented Nov. 17, 1896.

*Fig. 1.*



*Fig. 2.*



WITNESSES:

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(No Model.)

2 Sheets—Sheet 2.

E. F. STECK.  
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Fig. 3.

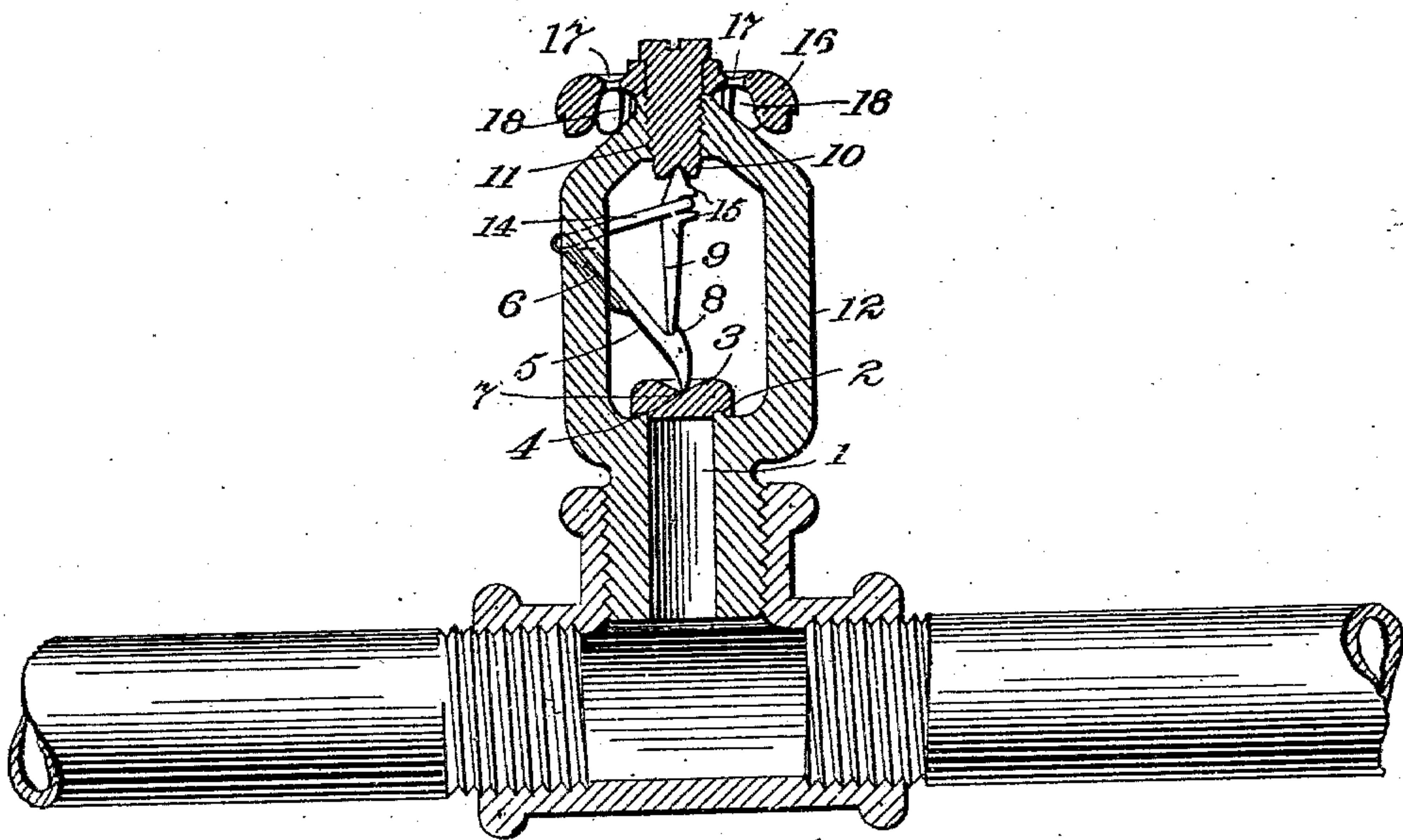


Fig. 4.

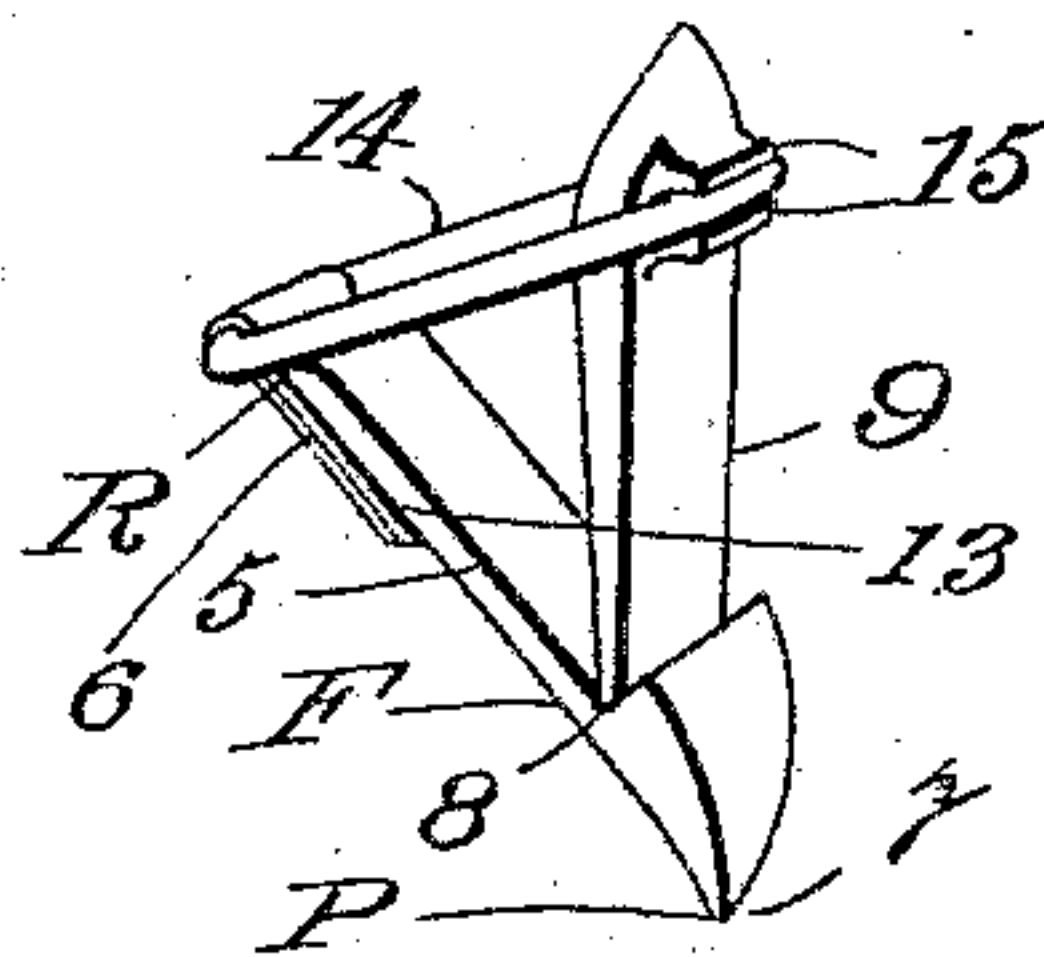
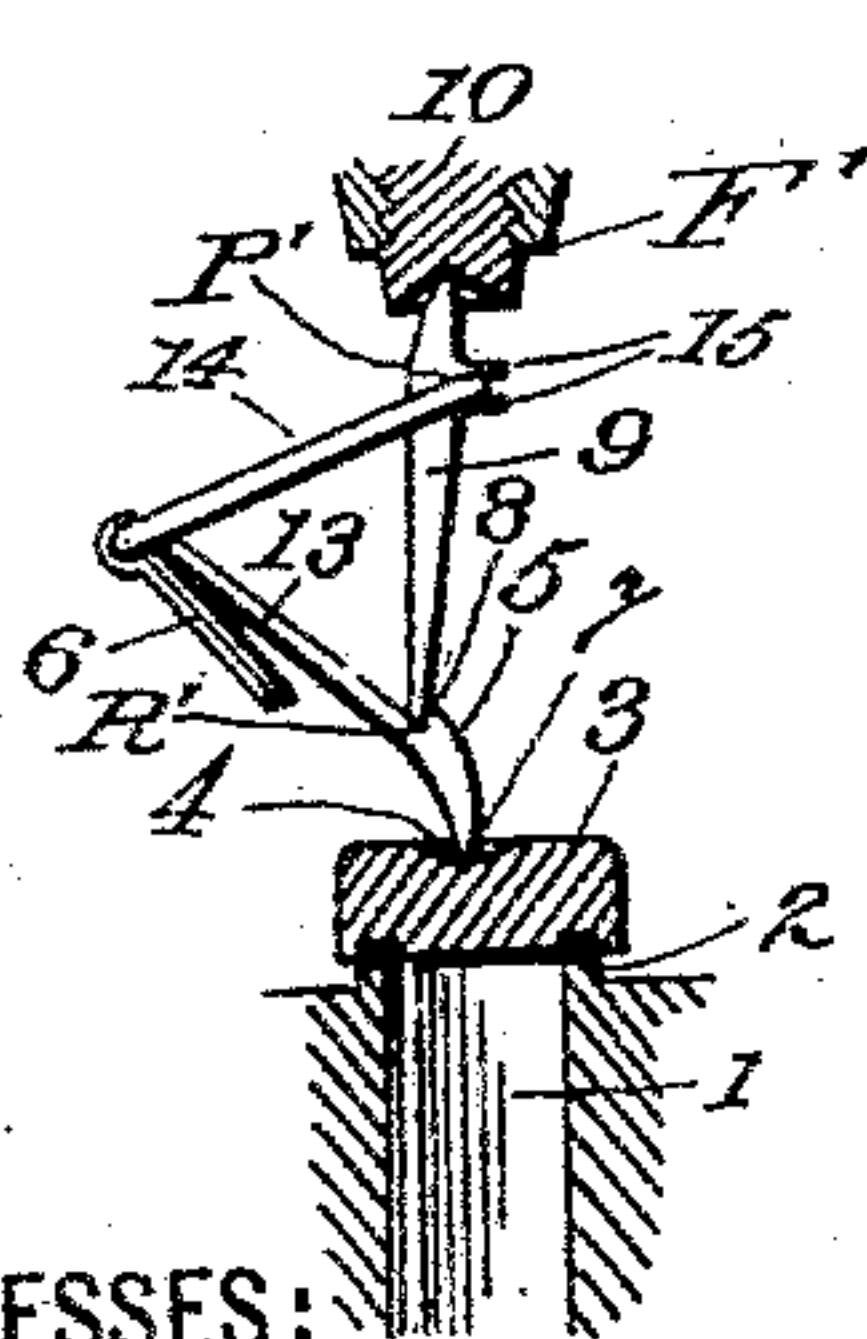


Fig. 5.



WITNESSES:

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Ch. V. Bilgrod

Fig. 6.

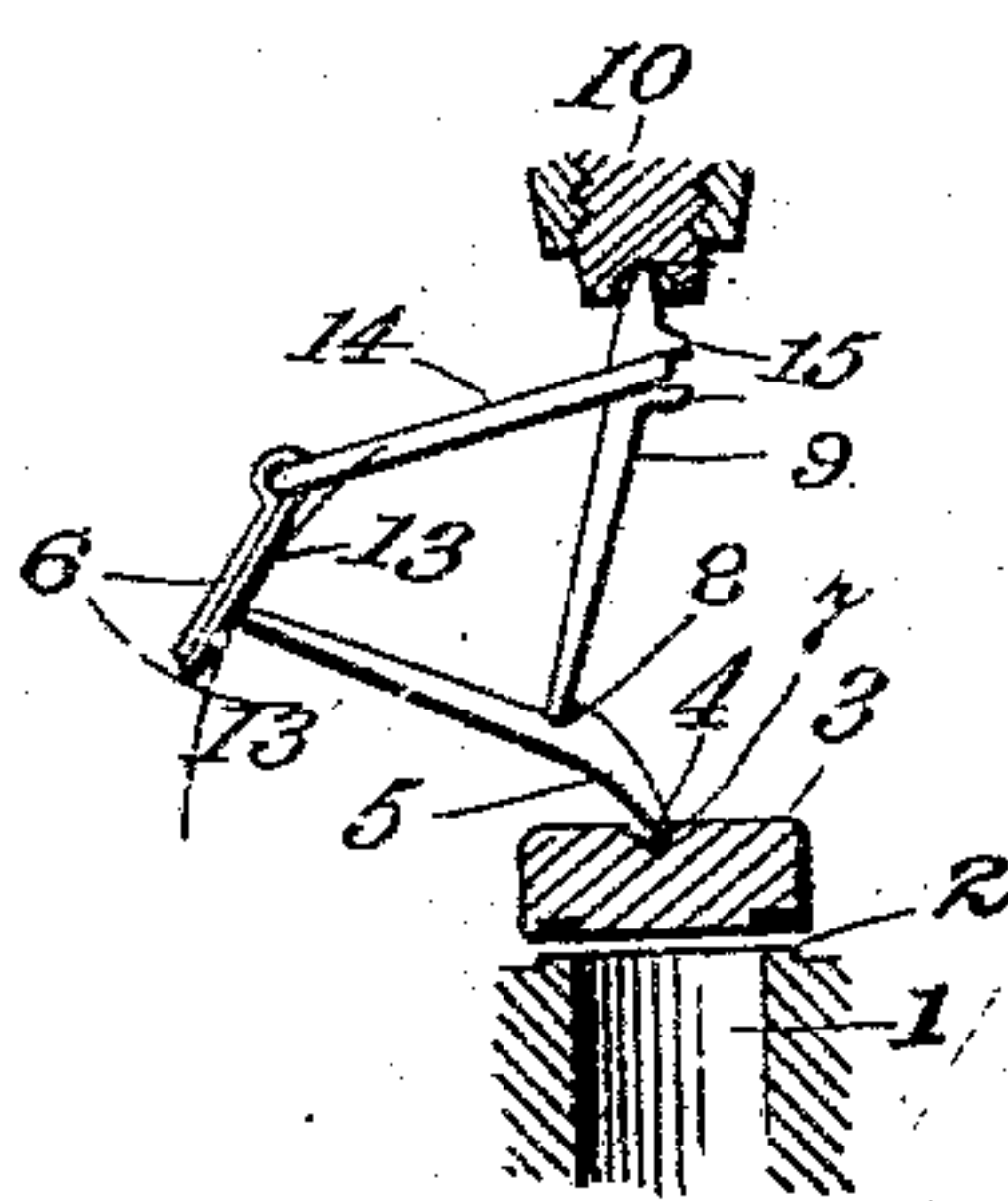
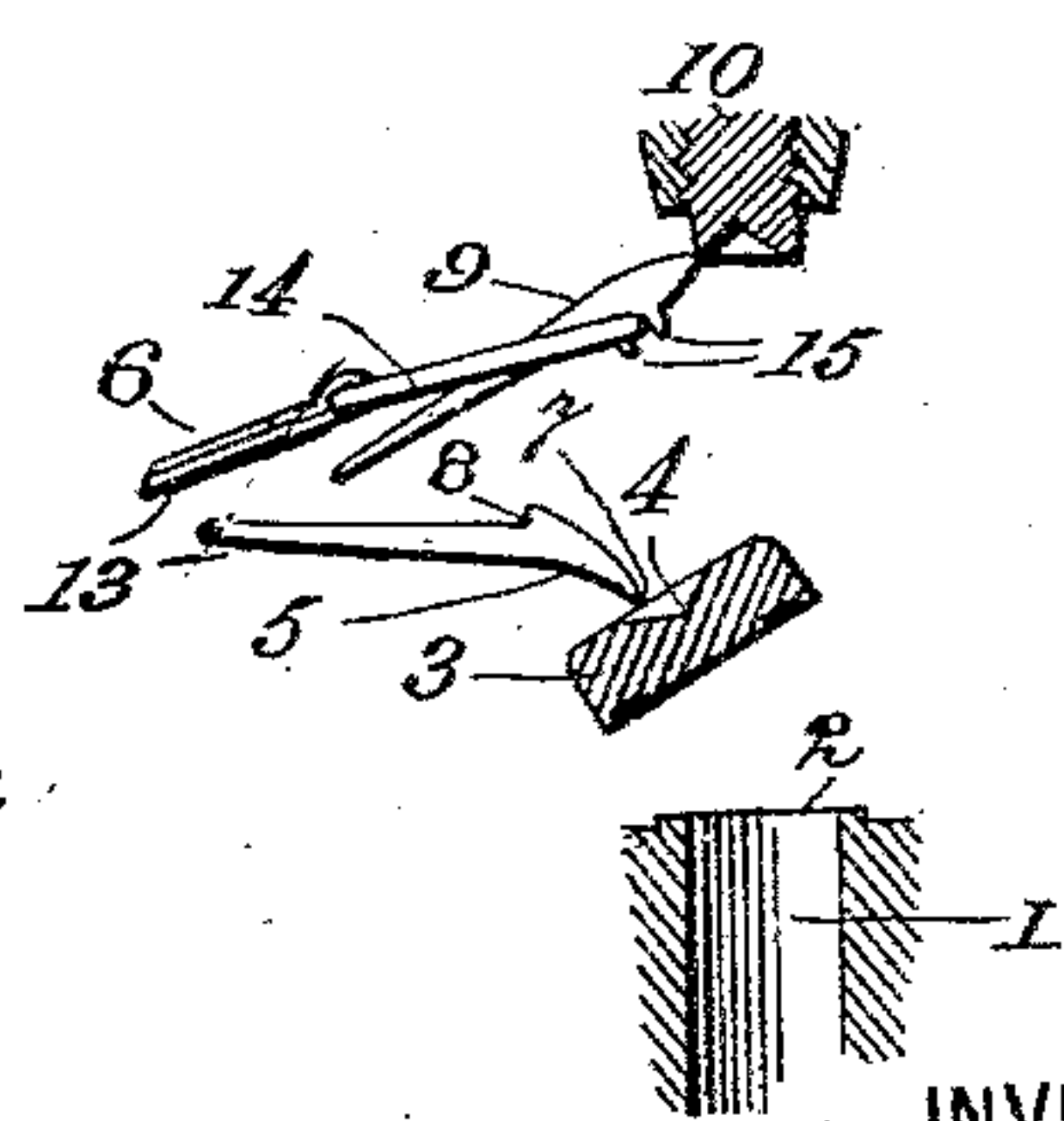


Fig. 7.



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# UNITED STATES PATENT OFFICE.

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## AUTOMATIC SPRINKLER FOR FIRE-EXTINGUISHERS.

SPECIFICATION forming part of Letters Patent No. 571,581, dated November 17, 1896.

Application filed April 10, 1896. Serial No. 586,937. (No model.)

*To all whom it may concern:*

Be it known that I, ERNST F. STECK, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Automatic Sprinklers for Fire-Extinguishing Systems, of which the following is a full, clear, and exact specification.

My invention relates to that class of automatic sprinklers for fire-extinguishing systems in which the valve is held upon its seat by a locking mechanism provided with a soldered joint adapted to melt at a comparatively low degree of heat when the fire starts and permit the valve to be forced from its seat and allow the discharge of the extinguishing fluid.

Heretofore in many devices of this character great difficulty has existed, and the failure of the device to operate has followed from the soldered members of the locking mechanism producing what is known in the art as a "drag," that is to say, by the soldered faces sliding one upon the other as soon as the solder becomes softened by the heat without directly separating, thus permitting the valve to partially open and allow the extinguishing fluid to flow against the soldered joint and cool it, thereby preventing the heat from thereafter melting the balance of the solder and permitting the valve to entirely relieve the extinguishing fluid.

The primary object of my invention is to provide improved and simple mechanism for avoiding this difficulty and causing the soldered members of the locking mechanism to directly separate the instant the solder becomes softened.

With these ends in view I have devised a mechanism which utilizes certain leverages to assist in the initial separation of the joined parts, whereby when the soldered joint begins to melt each member of the valve-retaining structure will mutually interact to exaggerate the separating tendency. This action and interaction is secured by means of levers, each lever assisting, in a sense, the movement of every other, as will be explained in detail, the result being a more rapid and efficacious removal of the valve controlling

and locking mechanism than has heretofore been obtained.

I show in the present case a locking mechanism for the valve having a soldered joint composed of two members soldered together (that is to say, secured together by some suitable fusible material) and being normally under tension in a line of strain extending at an angle to the plane of their soldered faces, whereby they will separate without their soldered faces dragging upon each other, and I produce this said strain or tension by means of a screw or other equivalent device which bears upon the levers of the locking mechanism and forces one of the soldered members against the valve, or against the opening pressure of the valve, one of the levers having a short arm communicating the major pressure to the valve, while its long arm is hitched or held against oscillation by the other member of the soldered joint.

My present invention consists in certain novel combinations of parts specified in the claims.

Referring to the accompanying drawings, which form a part of this specification, Figure 1 represents a side elevation of my improved form of sprinkler-locking device. Figure 2 represents a plan view. Figure 3 represents a vertical section. Figure 4 represents a perspective view of the locking device separated. Figure 5 represents the parts in the first moment of the separation after the melting of the fusible joint. Figure 6 represents a further movement of the parts, and Figure 7 the final separation.

1 represents the neck of the valve-seat 2, by which the device is attached to the piping or other passage containing the extinguishing fluid, and 3 is the valve of any suitable form, having in its upper side a concavity or seat 4 for the lower end of one member 5 of the soldered joint, whose other member is constituted by the portion 6. The lower end or short arm of the lever 5 is preferably pointed, as shown at 7, so as to impinge firmly against the concave face of the valve 4 and at the same time be capable of rocking or oscillating when the parts fly asunder. The concav-



ity 4, however, so retains the member 5 that, although it swings and oscillates, as will be described, it will at the moment of separation of the lock be held from substantial movement, and thus increase the efficacy of the leverages. The upper side of the lever 5 is provided with a notch 8, in which is stepped the lower end of an upright rod or post 9, whose upper end rests under a tightening-screw 10, threaded in a boss 11, formed on a yoke 12, secured to the neck 1. The lower end of the screw 10 is preferably concaved or indented, so as to insure its retention of the upper end of the post 9, which is preferably sharpened. The lower end of the post 9 is also pointed or sharpened, so as to permit the lever 5 to oscillate freely when the soldered joint is fused, and the point of contact between the lower end of the post 9 and the lever 5 is arranged slightly to one side of a straight line passing through the points of impingement of the lower ends 7 of the lever 5 and the upper end of the post 9, so that the pressure of the screw 10, while being capable of exerting powerful force against the valve 3 through the intermediary of the post 9 and the lower end of the lever 5, will nevertheless impart a tendency to the upper end of the lever 5 to fly outward and downward as soon as such upper end is released; but the long end of the lever 5 being proportionately of great length but a small fraction of the pressure exerted by the screw 10 will be communicated to the upper end of such arm, and hence the soldered joint is not required to sustain any material amount of strain.

The portion 6, constituting the other member of the soldered joint, is in the form of a loop at its upper and outward end, and it extends downwardly and underlaps the long arm of the lever 5, and is secured thereto by a portion 13, of fusible solder or other suitable material, located, preferably, at the extreme lower end of the loop 6, so that the loop will also constitute a lever, whose long arm is controlled by the solder. It thus requires but a small amount of the solder to hold it in place. The upper end of the member 6 is hitched or attached to the post 9 in any suitable manner, but preferably by means of a link 14, which passes through the loop 6 and around the post 9, and may be held on the post 9 by two lugs 15.

With a device thus constructed it will be seen that great pressure may be exerted upon the valve by means of the screw 10 through the intermediary of the post 9 and the lower end of the lever 5. At the same time the solder or soldered joint is relieved of sustaining any material part of this pressure and may be delicate to a maximum degree. It is also readily seen that the instant the solder 13 melts at the lower end of the loop 6 both the loop 6 and the lever 5 will swing outward, describing different arcs, as shown in dotted lines, Fig. 6, but in substantially the same

general direction. They will also instantly separate in a line of movement extending at an angle to their soldered faces, and can never again adhere even though the solder be hardened by the escaping fluid. This line is practically the line of strain and is approximately at a right angle to the plane of the soldered faces. Such line is indicated by the arrow, Fig. 6 of the drawings.

It will also be seen that several coacting sets of levers are here employed and that this mutual interaction serves to accelerate the separation of the locking parts. One system of leverages is shown at the points P, (power,) F, (fulcrum,) and R (resistance) in Fig. 4 of the drawings. This is a lever of the first order. A coacting system of levers is shown at the points P', (power,) F', (fulcrum,) and R' (resistance) in Fig. 5 of the drawings. This is a lever of the third order. These two systems of leverages assist one another and combine in such a way as to accelerate the initial movement or tendency to separation, thus preventing drag and eliminating the possibility of the soldered joint setting after the parts have once started.

It will be observed that the locking mechanism as constructed constitutes a strut and that the tendency to separation is exaggerated by the fact that the upper end of the plate 13, where it is hinged to the link 14, lies beyond the upper end of the member 5, and that when the locking-plate 13 separates from the member 5, to which it is soldered, the link 14, pulling upon its upper end, will swing it or turn it upon the upper end of the member 5, thus accelerating the tendency to separation.

16 represents a distributing cap or spray device secured in place by the screw 10 and having a number of perforations 17, through which the escaping fluid is sprayed. It may also be provided on its under concave side with propelling fins or blades 18, which impart a rotary movement thereto.

In order that the device may not be tampered with or may not work loose off one side, the collar or boss 11 may be punched by any suitable punch after the screw 10 has been turned up to place and the screw thus held against retrograde movement.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. An automatic sprinkler having in combination with a valve, means for controlling said valve consisting of a lever having one arm impinging said valve and being provided with a notch or seat, a bearing opposite said valve, a post fitted between said seat and bearing, a second lever overlapping the other arm of said first lever and attached thereto by a fusible connection and a link connection from said second lever to said post, substantially as and for the purpose set forth.

2. An automatic sprinkler having in com-



5 bination a valve, the lever 5 having its end 7 impinging said valve and being provided with a notch 8, a screw arranged opposite said valve, the post 9 seated in said notch 8 and bearing under said screw, the member 6 overlapping the under side of lever 5, and being soldered thereto, the link 14 pivotally secured

to the member 6 and surrounding said bar 9, said bar being provided with lugs 15, substantially as set forth.

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Witnesses:

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